WEATHER OF THE MONTH.

WEATHER OF NORTH AMERICA AND ADJACENT OCEANS.

GENERAL CONDITIONS.

By A. J. HENRY, Meteorologist.

Before examining in detail the weather of the current month, let us consider for a moment the general average weather conditions for January in the Northern Hemisphere. In that month pressure is high over the middle latitudes of the continents and low in the Arctic region and the northern portions of the Atlantic and Pacific Oceans. Pressure is highest over east-central Asia and lowest in the neighborhood of Iceland and also in the Gulf of Alaska. In the higher latitudes—say, to the northward of latitude 40° N., the prevailing winds are westerly, subject, of course to such variation as may be introduced by the current pressure distribution.

Current-pressure distribution.—Telegraphic and mail reports available at this writing show clearly that pressure in the middle western latitudes of the United States was considerably above the normal, and that immediately to the north, as in Canada and Alaska, pressure was for the most part below the normal.

The pressure of the two Pacific stations, Honolulu and Midway was generally above the normal. In this connection it is interesting to note that beginning in December, 1918, the uniformly low pressure which had prevailed at Honolulu since December, 1917, gradually merged into a type of moderately high pressure and that there was a still further increase in pressure at that station during the current month. Vessel reports from the North Pacific afford little definite information except as to the absence of gales. It may well be that such absence, especially in the Gulf of Alaska, is apparent rather than real, since it is known from reports of shore stations that there was a period of at least a week with fresh gales off the Washington and Oregon coasts and probably thence northward.

For the Atlantic area it is impossible to generalize freely, but there seem to have been the usual number of storms in the steamer lanes and during the last decade of the month to the southward, as indicated by reports from Bermuda and the Azores. In the first and second decades of the month pressure over middle latitudes in the Atlantic appears to have been above normal.

NORTH PACIFIC OCEAN.

By F. G. TINGLEY.

Only incomplete vessel weather reports are available from the North Pacific Ocean at this writing. It appears, however, from those at hand that the month was almost entirely free from severe storms. Of a total of some 330 observations thus far received from ships on trans-Pacific routes, only 35 show winds of a force of 7 or greater. These are divided as follows: 17 of force 7, 10 of force 8, 8 of force 9. No winds exceeding force 9 have been reported. Twenty-one vessels reported no gales or storms. The quiet conditions indicated are such as would be inferred from the pressure distribution shown by daily observations at the several island stations of the bureau, viz, Dutch Harbor, Midway Island, and Honolulu. This pressure distribution is discussed elsewhere.

NORTH AMERICA.

By EDWARD H. BOWIE, Supervising Forecaster.

[Dated: Weather Bureau, Washington, Feb. 18, 1919.]

The meteorological conditions during January were in a marked degree like those of the month immediately preceding, and markedly unlike those of January, 1918. During the current month the temperature was above the normal over nearly all parts of the United States; there were no widespread cold waves, except for the one at the beginning of the month; there were no disturbances attended by heavy and widespread falls of snow or sleet; and there were no destructive gales in the interior, and few on the coasts. Similar meteorological conditions prevailed during December, 1918. It will be recalled that December, 1917, and January, 1918, were months of great and prolonged cold waves, unusual falls of snow and sleet, and severe wind storms,[1] and hence these two months stand out in marked contrast with the two just passed.

It will be of interest therefore to set forth in some detail the apparent reasons why the two months of the current winter were so dissimilar to the same months of the preceding winter. First, it may be said that meteorologists are not agreed as to the primary causes that bring about such striking contrasts in atmospheric phenomena such as occurred in December, 1918, and January, 1919, and the corresponding months of the winter of 1917–18. That profound modifications of the general or primary circulation of the atmosphere are involved there seems no doubt, but what brings these about it is not possible to say. These modifications in the general circulation are unquestionably shown in the general distribution of air pressure over the Alaskan area and the Pacific Ocean, and since the types of LOWS and HIGHS that cross the United States seem to be predetermined by the pressure distribution within these areas, it follows that any abnormalities over these areas will be reflected in the atmospheric conditions in the United States.

Normally the pressure is low during the winter months over Alaska and the Aleutian Islands and high over the middle latitudes of the Pacific Ocean, but there are periods when this pressure distribution is intensified and other times when there is a complete reversal of this distribution. During such times marked departures from normal atmospheric phenomena of the United States occur. The connection between the pressure distribution prevailing over the Pacific Ocean and Alaska and the weather of the United States has been set forth in Supplement No. 4, M. W. R., *Anticyclones of the United States.* Particularly interesting in this connection will be found the accompanying graphs of pressure for December, 1918, and January, 1919, and the corresponding months of the winter of 1917–1918. (Charts E. H. B. XI and XII.) Attention is drawn to the striking dissimilarity in the departures from the normal pressures at the several stations. It will be noted that during the two months just passed the pressure was consistently below the normal in the Alaskan area, and above the normal over the middle latitudes of the Pacific Ocean, as shown by the daily observations at Honolulu and Midway Island, while during December,

[1] Cf. P. C. Day, "The Cold Winter of 1917–18" Mo. Wea. Rev., Dec., 1918, 46: 570–580, 4 figs, 24 charts.

1917, and January, 1918, opposite departures were the rule. It will be noted further that during the past two months there was a general deficit in air weight over the Aleutian Islands and Alaska, and it followed therefore that few pronounced areas of high barometer formed in that region and moved southeastward over the United States. Consequently, the temperature was generally above the normal, cold waves were infrequent, and heavy falls of snow and sleet confined to small areas. During the corresponding months in the winter of 1917–1918, there was a marked excess of air weight over Alaska and the Aleutian Islands, and it followed that there was a more or less constant drainage of cold air from these regions southeastward over the United States. The result was a succession of widespread cold waves, frequent and widespread falls of snow and sleet, and a general intensification of winter weather conditions in the United States. Attention is invited to a consideration of the charts of tracks of high and low pressure areas across the United States, published in this number of the REVIEW and also those of December, 1918, and December, 1917, and January, 1918. These will show the marked dissimiliarity in the types of cyclones and anticyclones during these months.[2]

During the current month nearly all LOWS crossing the United States were of the North Pacific and Alberta types; they passed rapidly eastward along the northern border. The only exceptions to this statement were two LOWS that formed over southern Texas and another that passed inland from the Oregon coast, moved thence southeastward to the mouth of the Rio Grande and from that region northeastward to the Canadian Maritime Provinces. In respect to HIGHS, none appeared over the western Canadian Provinces; four passed inland from the Pacific Ocean and eight made their appearance north of the Great Lakes or in the region of Manitoba, and of these one passed southward over the Middle West and the others passed eastward and southeastward to the Atlantic coast.

NORTH ATLANTIC OCEAN.

By F. A. YOUNG.

On account of war conditions the number of weather reports from the ocean was greatly reduced during the past year and the data available for the usual monthly discussion that should have been prepared for January, 1918, are too incomplete to justify an attempt at the present time to summarize. Instead, a short review of the weather for the current month has been prepared from the data so far received. It is necessarily incomplete, particularly for the latter part of the month, for which few reports are yet available.

On the 1st and 2d two vessels in the region between latitude 47° and 50° and longitude 30° and 33°, experienced strong northwesterly gales, with accompanying barometric readings of 29.72 inches and 30.07 inches, respectively, no other gale reports being received for these dates.

On the 3d the general conditions were very much the same as on the two previous days, except that there was a slight fall in the barometer readings. On the 4th and 5th moderate gales were recorded by a few vessels in widely scattered parts of the ocean.

According to the reports received the heaviest weather of the month occurred on the 6th (Chart IX); the center of the principal disturbance on that date was apparently about 10° west of the Irish coast, and northwesterly gales of from 60 to 90 miles an hour, with a minimum barometric reading of 28.67 inches, accompanied by "hail" and snow, were encountered by a number of vessels at short distances south of the center, the storm apparently covering the greater part of the steamer lanes, as far west as the 40th meridian. On the same day moderate gales, with rain and snow, were also reported in the region between latitude 37° to 41°, and longitude 63° to 66°. On the 7th the center of the European disturbance was apparently off the southwest coast of Ireland, which was swept by gales of over 60 miles an hour, the lowest barometric reading being 28.63 inches. The storm area had contracted considerably since the day before, as no high winds were reported west of the 27th meridian.

On the 8th, 9th, and 10th no well-defined area of low pressure could be determined, although storm reports were received from vessels in all parts of the steamer lanes.

On the 11th two vessels located near latitude 55°, longitude 42°, and latitude 49° and longitude 38°, respectively, encountered westerly gales of over 60 miles an hour, with "hail" and snow, and a barometer reading of 28.98 inches at the first position, probably not far from the center of the LOW. At the same time moderate westerly gales occurred in the region between Nova Scotia and the 40th parallel, while snow was reported at Halifax.

On the 12th (Chart IX) the entire territory between the 40th and 53d parallel, and the 30th meridian and the American coast, was swept by westerly and southwesterly gales of from 40 to 75 miles an hour, accompanied by snow. The center of this disturbance had apparently moved about 7 degrees eastward since the previous day, and was now near latitude 52, longitude 35. The conditions on the 13th and 14th and 15th, were similar to those of the 12th, and the LOW was evidently drifting slowly eastward, as on the 15th it was somewhere between the 25th meridan and the coast of Scotland.

On the 16th and 17th moderate gales were reported over different sections of the ocean, particularly between the 40th meridian and the Azores.

From the 18th to 21st, heavy weather still prevailed over the greater part of the steamer lanes, and on the 19th and 20th the storm area extended unusually far south, as winds of over 50 miles an hour were recorded in the region between the 35th and 40th parallels and the 52d and 56th meridians.

On the 22d a vessel near latitude 58, longitude 22, encountered southerly winds of about 50 miles an hour. No reports were received for the 23d, and on the 24th (Chart IX) there was apparently a well developed LOW central near latitude 38, longitude 68; strong northerly gales swept the coast between Hatteras and the Virginia Capes, and equally strong westerly and southerly winds were encountered over the southern and eastern quadrants of the storm area. No additional storms were reported until the 30th when one vessel near latitude 38, longitude 71, encountered a northwesterly gale of about 65 miles an hour, and a second report was received from near latitude 48, longitude 33, indicating westerly winds of the same force.

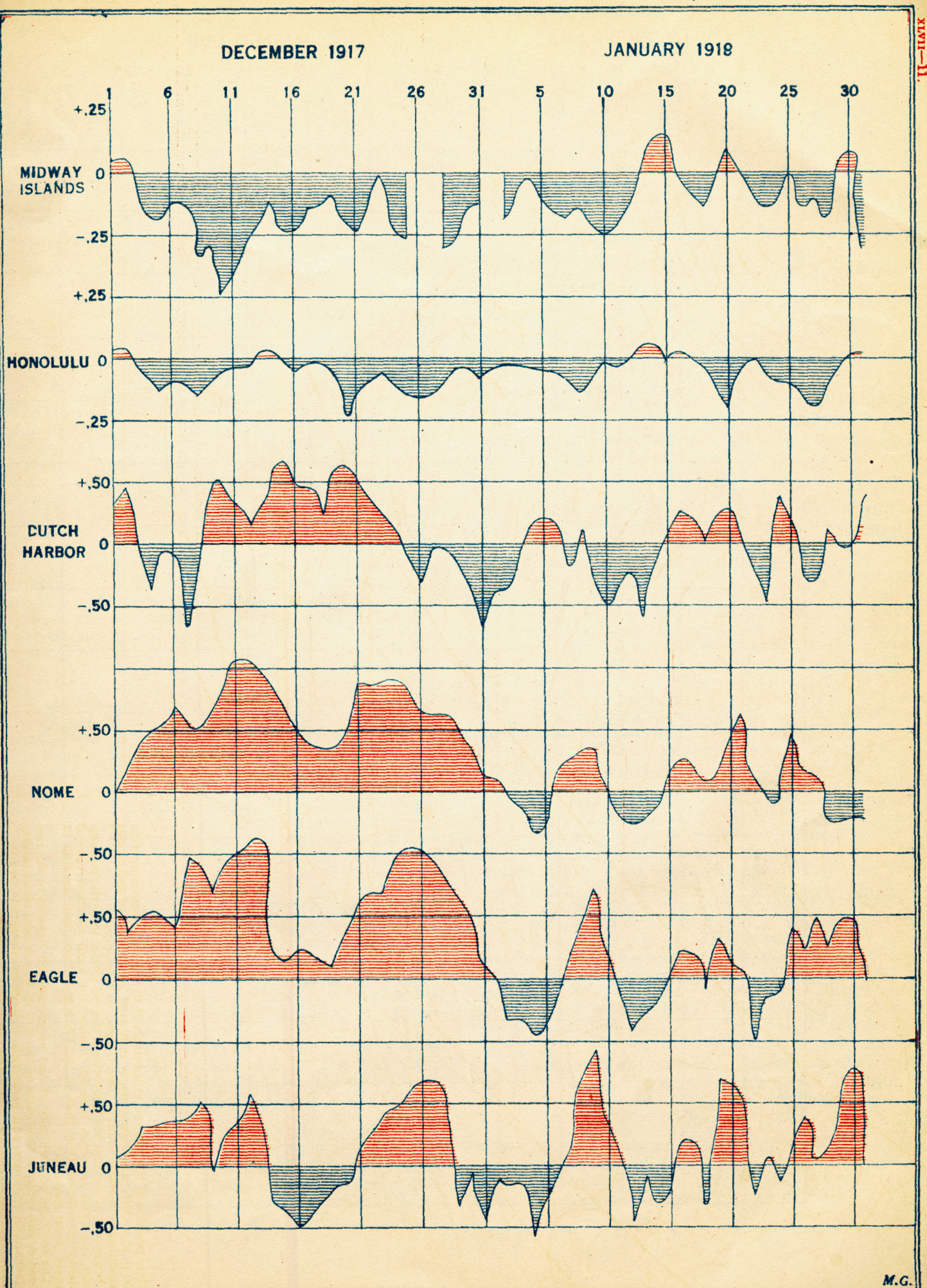
NOTES ON WEATHER IN OTHER PARTS OF THE WORLD.

BRITISH ISLES, JANUARY 1919.

With many cyclones passing over the British Isles, January precipitation was 155 per cent of normal in England and Wales, 122 in Ireland, and 94 in Scotland. Heavy snowstorms occurred January 3–4, and 27.—Sym. Met. Mag., Feb. 1919.

[2] Cf. also P. C. Day, ibid.

E. H. B. XI. Pressure abnormalities during December, 1917, and January, 1918, for Midway Islands, Honolulu, and Alaskan stations.



E. H. B. XII. Pressure abnormalities during December, 1918, and January, 1919, for Midway Islands, Honolulu, and Alaskan stations.